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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,017	09/08/2003	Joseph Cowan	03-0599 81582	4056

24319 7590 07/30/2004

LSI LOGIC CORPORATION
1621 BARBER LANE
MS: D-106 LEGAL
MILPITAS, CA 95035

EXAMINER

SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,017

Applicant(s)

COWAN, JOSEPH

Examiner

Sean P. Shechtman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-21 are presented for examination.

Drawings

2. Figures 1-3 and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: Fig. 5, element 500.
4. The drawings are objected to under 37 CFR 1.83(a) because they fail to show “the different levels of shading” as described in the specification (See Fig. 5 and page 7, lines 20-22 of the instant specification).
5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the generating a plot of a value of a net parameter summed over identical rounded coordinates in multiple nets (claims 10 and 20), the combining multiple coordinates having an identical value for different vertices in the net into a single rounded coordinate (claims 3 and 13), a database (claims 4 and 14), a database including any of the item identifications listed in claims 4 and 14, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior

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version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 11-13, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,731,986 to Yang.

Referring to claims 1, 11, and 21, Yang teaches a method and program product for representing a net of an integrated circuit die comprising steps of: (a) receiving as input vertices of a net in an integrated circuit die (Col. 2, lines 35-48; Col. 1, lines 16-24); (b) calculating rounded coordinates having a selected resolution for each of the vertices (See explanation below); (c) calculating rounded coordinates having the selected resolution along the net between

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each of the vertices (See explanation below); and (d) generating as output the rounded coordinates to represent the net (Col. 4, lines 28-30).

Yang clearly shows representing a net of an integrated circuit die (See, for example, Fig. 5A or 5I).

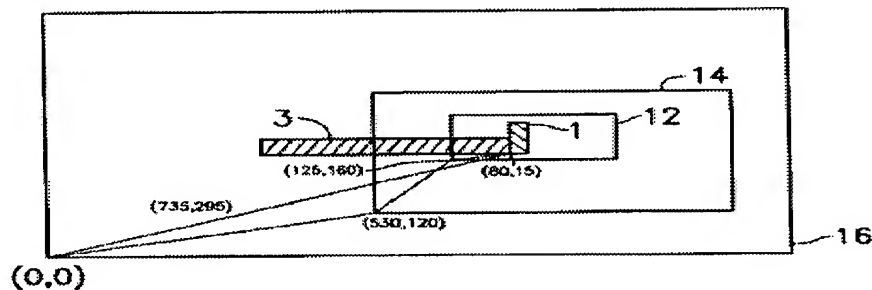


FIG. 5A

Examiner respectfully asserts that the vertex is a point at which the sides of an angle intersect, and therefore, examiner respectfully asserts that the coordinates such as the vertex (80,15) taught and seen above, by Yang, are vertices.

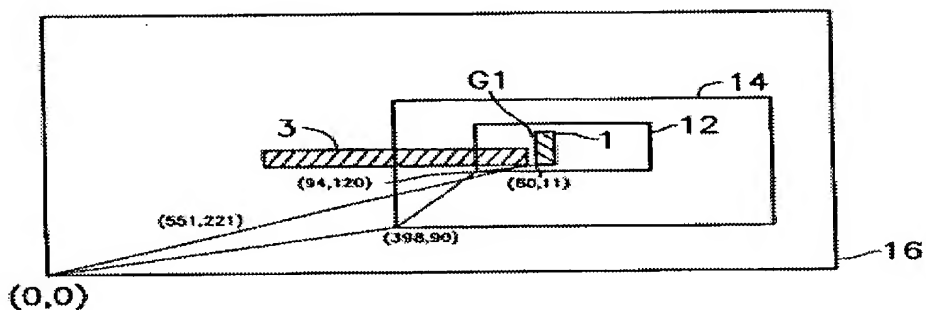


FIG. 5B

Figure 5B shows the vertices downsized 75%. Clearly, these coordinates are rounded, because $.75 \times 125$ is 93.75, and the figure shows 94. Yang clearly teaches how these coordinates

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are rounded in column 3, lines 33-37. Clearly, this goes for all the coordinates (see the difference between figures 5A and 5B).

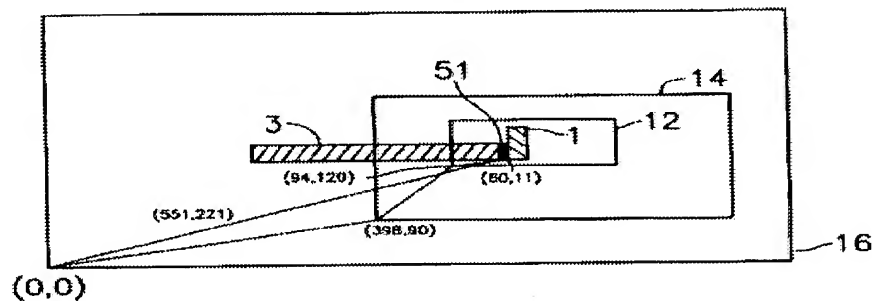


FIG. 5I

Yang clearly teaches calculating coordinates (551,221) between vertices (94,120) and (60,11), said coordinates (551,221) clearly having been rounded off after downsizing 75% (Col. 5, line 33- Col. 6, line 10).

Although Yang does not say that the rounded coordinates have been calculated having a selected resolution, Yang clearly shows and teaches that all the coordinates are rounded off to the 1's place, and therefore, Yang has clearly chosen a coordinate resolution of 1 for all the coordinates. The examiner believes that there is a difference between selecting a coordinate resolution from a plurality of different coordinate resolutions, which the claims do not require, and simply selecting one coordinate resolution. For example, *although not relied upon in the rejection*, U.S. Pat. No. 5,568,563 to Tanaka clearly teaches selecting a coordinate resolution from a plurality of different coordinate resolutions in column 8, lines 27-44. Tanaka clearly teaches a coordinate resolution of "1" and a coordinate resolution of "0.5". The examiner believes that this reference clearly shows the distinction between selecting a coordinate

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resolution from a plurality of different coordinate resolutions, and selecting just one coordinate resolution.

Referring to claims 2 and 12, Yang teaches the system above, wherein step (c) comprises incrementing an X-coordinate or a Y-coordinate of the rounded coordinate by the selected resolution to generate rounded coordinates between each vertex. Figure 5B shows the vertices downsized 75% (i.e., resolution). Clearly, these coordinates are rounded, because $.75 \times 125$ is 93.75, and the figure shows 94.

Referring to claims 3 and 13, Yang very clearly teaches the system above, further comprising a step of combining multiple rounded coordinates having an identical value (transformation coordinates) for different vertices in the net into a single rounded coordinate (Col. 3, lines 1-4).

$$\begin{aligned}(X, Y) &= (80, 15) \times 75\% + (125, 160) \times 75\% + (530, 120) \times 75\% \\ &= (60, 11) + (94, 120) + (398, 90) \\ &= (552, 221)\end{aligned}$$

7. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,572,636 to Sakuraba.

Referring to claim 21, Sakuraba teaches a method of representing a net comprising steps of: (a) receiving as input vertices net (Col. 12, lines 21-49); (b) selecting a resolution for representing spatial features of the net (Col. 20); (c) calculating rounded coordinates having the selected resolution for each of the vertices (Col. 12, lines 21-50); (d) calculating rounded coordinates having the selected resolution along the net between the vertices (Col. 12, line 59 –

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Col. 13, line 4); and (e) generating as output the rounded coordinates to represent the net (Col. 12, line 59 – Col. 13, line 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,731,986 to Yang as applied to claims 2 and 12 above, and further in view of U.S. Pat. No. 5,751,581 to Tau.

Referring to claims 4 and 14, Yang clearly teaches the system above, further comprising a step of entering the rounded coordinates representing the net into a database (Col. 7, lines 47-48).

Yang fails to teach that the database also has at least one of a wafer lot identification, a wafer identification, a die identification, and a layer identification.

Examiner respectfully submits that the claims, as such, do not require any functional relationship or use of the other information in the database together with the coordinate data. Examiner respectfully asserts that the storage of two pieces of data together in a database is well within the level of one of ordinary skill in the art.

Tau teaches analogous art, wherein a database has at least one of a wafer lot identification, a wafer identification, a die identification, and a layer identification (See paragraph 11 of the detailed description; Cols. 3-4).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Tau with the teachings of Yang.

One of ordinary skill in the art would have been motivated to combine these references because Tau teaches the database is a backup database to the WIDS database, for providing redundancy, or "fault tolerance" (See paragraph 11 of the detailed description; Cols. 3-4).

9. Claims 5-10 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,731,986 to Yang as applied to claims 1, 2, 11, and 12 above, and further in view of U.S. Pat. No. 5,392,222 to Noble.

Referring to claims 5 and 15, Yang fails to teach the system above, further comprising a step of finding a defect on the integrated circuit die by associating a rounded coordinate that occurs more than a selected number of times in a plurality of failed nets with a location of the defect. Referring to claims 7 and 17, Yang fails to teach the system above, further comprising a step of displaying the number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 8 and 19, Yang fails to teach the system above, further comprising a step of associating a color with the number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 9 and 16, Yang fails to teach the system above, further comprising a step of filtering the rounded coordinates by at least one of a wafer lot, a wafer, die, an area, and a layer. Referring to claims 6 and 17, Yang fails to teach the system above, further comprising a step of finding a number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 10 and 20, Yang fails to teach the system above, further

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comprising a step of generating a plot of a value of a net parameter summed over identical rounded coordinates in multiple nets.

However, Noble teaches analogous art, wherein referring to claims 5 and 15, Noble teaches a step of finding a defect on an integrated circuit die by associating a rounded coordinate that occurs more than a selected number of times in a plurality of failed nets with a location of the defect. Referring to claims 7 and 17, Noble teaches a step of displaying the number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 8 and 19, Noble teaches a step of associating a color with the number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 9 and 16, Noble teaches a step of filtering the rounded coordinates by at least one of a wafer lot, a wafer, die, an area, and a layer. Referring to claims 6 and 17, Noble teaches a step of finding a number of times each rounded coordinate occurs in a plurality of failed nets. Referring to claims 10 and 20, Noble teaches a step of generating a plot of a value of a net parameter summed over identical rounded coordinates in multiple nets (Col. 9, line 18 – Col. 10, line 58; Col. 4, lines 45-68 of '222).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Noble with the teachings of Yang.

One of ordinary skill in the art would have been motivated to combine these references because Noble teaches a system for analysis and repair of VLS circuits that allows for locating a field of view such that selected conductors can be accessed without changing the field of view (Col. 1, lines 14-21 of '222). Furthermore, Noble teaches locating the best field of view position

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that offers the maximum possible information in diagnosis or region that repair can be most efficiently made (Col. 5, line 61 – Col. 6, line 46 of '222).

Conclusion

10. The prior art of art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents or publications are cited to further show the state of the art with respect to clearly teaching selecting a coordinate resolution from a plurality of different coordinate resolutions (column 8, lines 27-44).

U.S. Pat. No. 5,568,563 to Tanaka

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (703) 305-7798. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SPS

Sean P. Shechtman

July 23, 2004

A handwritten signature in black ink, appearing to read "L. P. Picard", written in a cursive style.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100